



**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

PL

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

09/228,694 01/12/99 PANDYA A 50353

IM22/0216

PETER F CORLESS
PO BOX 556
MARLBOROUGH MA 01752

EXAMINER

LEE, S

ART UNIT

PAPER NUMBER

1752

DATE MAILED:

4
02/16/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/228,694

Applicant(s)
Pandya et al.

Examiner
Sin J. Lee

Group Art Unit
1752



☒ Responsive to communication(s) filed on Jan 12, 1999 ~~4~~ Feb 11, 1999

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) 1-20 is/are pending in the application

Of the above, claim(s) _____ is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-20 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

Art Unit: 1752

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al (5,844,057).

Watanabe et al teach a chemically amplified positive resist composition containing a polymer having recurring units hydroxyphenyl groups and acid labile group and a photoacid generator. See particularly, col.2, lines 8-25, col.5, lines 24-67, col.6, lines 1-26, lines 43-45, lines 61-67, col.7, lines 60-65, col.19, lines 29-51.

Art Unit: 1752

In the formula (3) shown in col.6 of the prior art, it is indicated that the hydroxyl group can be located anywhere on the phenyl ring, which means that the hydroxyl group can be located at the meta, para or ortho position of the phenyl ring. Therefore, it would have been obvious to one having ordinary skill in the art that some of the recurring units would have meta-hydroxyphenyl groups and some would have para-hydroxyphenyl groups. Also in the same formula, R^5 can be $-COOX$ wherein X is a hydrogen or acid labile group. Therefore, the prior art would have made the present invention of claim 1 obvious.

With respect to the presently claimed S group in claims 8-9, the formula (3) shown in col.6 of the prior art indicates that R^3 of the $-OR^3$ group attached to the phenyl ring is an acid labile group. As the preferred examples for the acid labile group, Watanabe et al list (along with *only five other* categories) normal, and branched alkyl groups including methyl, ethyl, propyl, isopropyl, n-butyl, iso-butyl, and tert-butyl groups. Since there are only six categories of acid labile group examples listed by Watanabe et al, it would have been obvious for one having ordinary skill in the art to choose normal, and branched alkyl groups including methyl, ethyl, propyl, isopropyl, n-butyl, iso-butyl, and tert-butyl groups as the acid labile group, R^3 , with a reasonable expectation of achieving the chemically amplified positive resist composition which is improved in sensitivity, resolution, latitude of exposure, and process adaptability over the conventional resist compositions.. Furthermore, Since applicants state on page 10 of the present specification that the suitable S groups include aromatic groups such as phenyl and that the

Art Unit: 1752

phenyl group is optionally substituted with non-reactive groups such as alkoxy group, the prior art's teaching that $-OR^3$ attached to the phenyl ring can be methoxy, ethoxy, propoxy, isopropoxy, n-butoxy, iso-butoxy, and tert-butoxy (all of which are alkoxy groups), would have made the present inventions of claims 8-9 obvious.

With respect to present claim 11, as discussed above, the formula (3) of the prior art teaches that R^5 group can be $-COOX$ wherein X is a hydrogen atom or acid labile group. As one of the preferred examples (only six different categories) for the acid labile group, the prior art lists normal and branched alkyl groups including methyl, ethyl, propyl, isopropyl, n-butyl, isobutyl, and tert-butyl groups. It would have been obvious for one having ordinary skill in the art to choose tert-butyl group as the X of the $-COOX$ group for the R^5 group with a reasonable expectation of achieving the chemically amplified positive resist composition which is improved in sensitivity, resolution, latitude of exposure, and process adaptability over the conventional resist compositions.

With respect to present claims 5, 7, 9, 12, 19, the prior art, referring to the formula (2) or (3), teaches in col.7, lines 60-65 that the ratio of p or t to the sum of $(p+q+r+s)$ or $(t+q+r+s)$ is preferably between 0.05 and 0.8 in molar ratio. The ratio of q to the sum of $(p+q+r+s)$ or $(t+q+r+s)$ is preferably between 0.2 and 0.95 in molar ratio,. The preferred range of r and s is 0 to 0.5. If one picks p or t to be 0.05, q to be 0.85, r to be 0.05 and s to be 0.05, then the sum of q and s (which corresponds to the presently claimed sum of x, y, and z) would be 0.90 (90 mole

Art Unit: 1752

percent) and the sum of q , r , and s (which corresponds to the presently claimed sum of w' , x' , y' , and z') would be 0.95 (95 mole percent). Since the values for the sum of q and s and the sum of q , r , and s overlap with the presently claimed values for the sum of x , y , and z and the sum of w' , x' , y' , and z' respectively, the prior art teaching would have made the present inventions of the claims 5, 7, 9, 12, and 19 *prima facie* obvious. In the case "where the [claimed] ranges overlap or lie inside ranges disclosed by the prior art," a *prima facie* case of obviousness would exist which may be overcome by a showing of unexpected results, In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

With respect to present claims, 14 and 16, Watanabe et al teach the use of a silicon wafer as their substrate (col.19, lines 31-32), and since applicants state on page 17 of the present specification that the composition may be applied over *silicon* or silicon dioxide wafers for the production of *microprocessors* and other integrated circuit components, the prior art teaches the present inventions of these claims.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is (703) 305-0504. The examiner can normally be reached on Monday-Friday from 8:30 am EST to 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Janet Baxter, can be reached on (703) 308-2303. The fax phone number for the

Art Unit: 1752

organization where this application or proceeding is assigned is (703) 305-3599 for after final responses or (703) 305-7718 for all other responses.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0661.

S. J. L.

S. Lee
February 8, 2000



JANET BAXTER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700